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somewhere between 1:00 and 3:00 P.M., showing the influence of internal factors upon transpiration. The rate of evaporation was determined by Piche atmometers and transpiration loss by weighing closed bottles of water in which the excised leaves were inserted. Leaves taken from the same plant at heights of 13, 47, 71, and 100 cm. showed relative transpirational losses per unit area of 100, 114, 103, and 86, or a somewhat smaller loss from the upper leaves than from the lower ones placed under the same conditions.

BURNS<sup>9</sup> has compared the transpiration of *Pinus Strobus* seedlings grown in nursery beds unshaded, half shaded, and full shaded, with the evaporation from black and white atmometers, and has found a closer relation between the transpirational losses and those from the black atmometer. The relative transpiration was here for the unshaded, half shaded, and full shaded plants respectively 0.0633, 0.0346, and 0.0088, from which he calculated the amount of water transpired to be proportionately 21, 8, and 1 parts. A further comparison showed the average green weight of the unshaded, half shaded, and full shaded plants to be respectively 0.304, 0.166, and 0.090 gm.; while the dry weight was 0.063, 0.034, and 0.010 gm.; that is, the dry weight of the shadeless plants was 6 times that of the full shaded, and twice that of the half shaded plants. On the other hand, the nitrogen content in percentage of dry weight was respectively 2.18, 2.70, and 6.89, or nearly 3 times as much in the full shaded plants as in either of the others, showing that a large amount of transpiration is not to be related to the absorption of ash constituents. BURNS concludes that his experiment indicates that differences in size and chemical composition of these white pine seedlings must be sought along the line of photosynthesis and assimilation, rather than through absorption and transpiration.—GEO. D. FULLER.

**Taxonomic notes.**—COTTON<sup>10</sup> has described collections of cryptogams made by Mrs. ELINOR VALLENTIN, in 1909–1911, on the western islands of the Falklands. An interesting account of the phytogeography of the region is followed by systematic lists of marine algae (138 spp.), freshwater algae (54 spp.), lichens (95 spp.), and fungi (36 spp.). The representation of the four groups of algae is as follows: Cyanophyceae, 4 spp.; Chlorophyceae, 26 spp. (one new); Phaeophyceae, 39 spp.; Rhodophyceae, 69 spp. (one new). The list of fungi includes descriptions of 6 new species.

FERNALD and WEATHERBY<sup>11</sup> have investigated the perplexing genus *Puccinella*, a group of species placed by some in *Glyceria* and by others in *Fes-*

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<sup>9</sup> BURNS, G. P., The relative transpiration of white pine seedlings. *Plant World* 18:1–6. 1915.

<sup>10</sup> COTTON, A. D., Cryptogams from the Falkland Islands collected by Mrs. VALLENTIN. *Jour. Linn. Soc. Bot.* 43:137–231. *pls.* 4–10. 1915.

<sup>11</sup> FERNALD, M. L., and WEATHERBY, C. A., The genus *Puccinellia* in Eastern North America. *Rhodora* 18:1–28. *pls.* 114–117. 1916.

*tuca*. They distinguish 11 species from Eastern North America, including 4 new species, 4 new combinations, and a new variety. The full synonymy and extensive citations of exsiccatae should make the recognition of the species clear.

FOERSTE<sup>12</sup> has described a new genus (*Dictyophlois*) of rhizophores, related to those of *Stigmara ficoides*, from the Subcarboniferous of western Kentucky.

HALL,<sup>13</sup> in continuing his studies of Californian plants, has described new species in *Brodiaea*, *Cymopterus*, *Pentachaeta*, *Haplopappus*, *Aster*, *Erigeron*, and *Arnica*.

HAYATA<sup>14</sup> has concluded that *Viscum japonicum* Thunb. is not congeneric with the other species of *Viscum*, and has made it the type species of a new genus, *Pseudixus*.

KOIDZUMI,<sup>15</sup> in presenting a fascicle of new or little known plants of Japan, has described new species in *Abelia*, *Salix* (2 spp.), and *Saussurea*.

In a "commemoration number" of the *Botanical Magazine* of Tokyo,<sup>16</sup> dedicated to Professor J. MATSUMURA on the occasion of the twenty-fifth anniversary of his professorship, the following taxonomic contributions appear: V. F. BROTHERRUS and SHŪTAI OKAMURA describe a new genus (*Ishibaea*) of mosses belonging to the Brachytheciaceae; TAKENOSHIN NAKAI publishes a synopsis of the Korean species of *Saussurea*, including 24 species, 5 of which are described as new; YŪSHUN KUDŌ publishes a synopsis of the species of *Cacalia* in Northern Japan, recognizing 11 species, 2 of which are described as new; YOSHITADA YABE discusses some new or little known plants from Northern China, describing new species in *Deschampsia*, *Listera*, and *Clematis*; TOMITARO MIKINO describes 2 new genera, namely *Matsumurella* and *Ajugoides*, both of the Labiates (Stachydeae).

OSTENFELD<sup>17</sup> has described a new species of *Ruppia* (*R. anomala*) from Porto Rico, which differs from *R. maritima* and the other species of the genus in the development of the stipe of the fruit. In other species each sessile pistil, after fertilization, develops as a stipitate fruit; while in *R. anomala*

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<sup>12</sup> FOERSTE, AUG. F., *Dictyophlois reticulata*, gen. et sp. nov. Bull. Torr. Bot. Club 42:675-677. pl. 33. 1915.

<sup>13</sup> HALL, H. M., New and noteworthy Californian plants. II. Univ. Calif. Publ. Bot. 6:165-176. pl. 20. 1915.

<sup>14</sup> HAYATA, BUNZŌ, On *Pseudixus*, a new genus of Loranthaceae founded on the well known and widely distributed species *Viscum japonicum* Thunb. Bot. Mag. Tokyo 29:31-34. 1915.

<sup>15</sup> KOIDZUMI, GENICHI, Decades plantarum novarum vel minus cognitarum. Bot. Mag. Tokyo 29:309-315. 1915.

<sup>16</sup> Bot. Mag. Tokyo 29:161-283. 1915.

<sup>17</sup> OSTENFELD, C. H., *Ruppia anomala*, sp. nov., an aberrant type of the Potamogetonaceae. Bull. Torr. Bot. Club 42:659-662. pl. 32. 1915.

the stipes develop together as a common stipe, at the summit of which the drupelets "are placed in a starlike manner."

STANDLEY,<sup>18</sup> in continuing his studies of tropical American plants, under a variety of titles has described numerous new forms as follows: *Wercklea* and *Peltaea*, new genera of Malvaceae; new species in Cyperaceae (2), Amaranthaceae (18; 11 of which belong to *Iresine*), Allionaceae (3), Caesalpiniaceae (4), Mimosaceae (4), Fabaceae (6), Ebenaceae (5; 3 of which belong to *Diospyros*), and Rubiaceae (20); also new species in *Geranium* (2), *Malache* (4), *Waltheria*, *Styrax*, *Evea* (2), *Duggena*, *Arctophyllum* (3), and *Psychotria* (11).—J. M. C.

**Inheritance of awns and velvet chaff.**—Students of genetic problems in wheat have arrived at conflicting conclusions, owing, no doubt, to the existence of biotypes possessing diverse factorial constitutions with respect to the characters under consideration. The HOWARDS have shown<sup>19</sup> that the velvet chaff of wheat may be of two distinct kinds, characterized by different types of hairs. Each kind of hair is produced by a distinct Mendelian factor, and the two kinds are mingled on the glumes when both of these factors are present. Only in the absence of both velvet factors are the glumes glabrous. Selfing any hybrid in which both velvet factors are heterozygous produces a progeny consisting of 15 velvet chaff to 1 glabrous. This result has received further confirmation in a recent paper by the same authors,<sup>20</sup> which is devoted chiefly to the inheritance of awns. Most of the genetical studies which have been made with the latter characteristic have involved forms which are not completely awnless. The HOWARDS used, among others, completely awnless varieties, and demonstrated that two independent factors affect the extent and nature of the awning. One of these factors (*T*) produces short awns or "tips" only, which are developed most conspicuously in the distal portion of the spike, while the other (*B*) also produces short awns, which are distributed more uniformly over the spike. The combined action of both of these factors in the homozygous state is required to produce the fully bearded condition. With respect to both of these factors, the heterozygote is successfully distinguished from the homozygotes by a distinctly intermediate condition. Completely bearded wheats have the formula *TTBB*, and the completely beardless are *ttbb*; the complete ratio of forms produced in the  $F_2$  of a cross between awned and awnless forms,

<sup>18</sup> STANDLEY, PAUL C., Studies of tropical American Phanerogams. No. 2. Contrib. U.S. Nat. Herb. 18:87-142. 1916.

<sup>19</sup> HOWARD, A., and HOWARD, GABRIELLE L. C., On the inheritance of some characters in wheat. II. Mem. Dept. Agric. India 5:no. 1. 1912.

<sup>20</sup>———, On the inheritance of some characters in wheat. II. Mem. Dept. Agric. India 7:273-285. 1915.